

A rare form of Hansen's disease presenting as filiform verrucous papules on the feet



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INTRODUCTION

Hansen's disease is a chronic granulomatous disease caused by *Mycobacterium leprae*, an acid-fast bacillus that lives in the cytoplasm of macrophages and Schwann cells. Commonly affected areas include the peripheral nervous system, skin, upper respiratory tract, eyes, and testes. Patients may show no signs of the disease for up to 20 years after infection. The disease may present along a spectrum of clinical manifestations ranging from lepromatous leprosy to tuberculoid leprosy.¹

The peripheral nervous system is often affected first, as patients present with numbness and paresis but no visible lesions. Cutaneous lesions are variable in presentation, depending on which pole of disease the patient has, but may include papules, nodules, and plaques. Lesions are typically hypopigmented, erythematous, or copper colored, and they may be associated with reduction or complete loss of sensation and anhidrosis.² Hansen's disease rarely presents with verrucous lesions. This case report presents an unusual filiform verrucous presentation of Hansen's disease on the plantar aspect of the feet in a patient with lepromatous leprosy.

CASE REPORT

A 27-year-old man, originally from the Pacific Islands, reported to the clinic with a 3-year history of enlarging red-brown plaques and nodules over his extremities and face with mostly sparing of the trunk. He also complained of thick, dry skin over the soles of his feet and systemic complaints of weakness, fatigue, arthralgias, night sweats, and hoarseness. He had no prior medical problems and no forms of immunosuppression. He reported a history of walking barefoot at home and wearing sandals

when outside. There was no known history of penetrating trauma to the feet.

On physical examination, he exhibited scaly, brownish-red infiltrated nodules and plaques on his face, ears, arms, and legs. He had loss of the lateral third of his eyebrows and infiltration of the skin of his forehead causing a leonine facies appearance. His hands displayed multiple abrasions secondary to insensitivity, and he was found to have loss of temperature sensation over affected areas. Palpation of his peripheral nerves found enlarged ulnar and greater auricular nerves. On the plantar aspect of his feet bilaterally were hyperkeratotic scaly plaques with ulcerations and fissures (Fig 1). His fingernails and toenails were thickened and dystrophic. Histopathology from a biopsy of his right arm was positive for a lymphohistiocytic infiltrate with a grenz zone, and numerous acid-fast organisms within histiocytes and nerves were seen on Fite's stain. A diagnosis of lepromatous leprosy was made and he was started on a multidrug regimen of rifampin, dapsone, and clofazimine for a planned treatment course of at least 24 months. Dapsone was later changed to clarithromycin secondary to intolerance to dapsone. One week into therapy, fever, night sweats, arthralgias, lower extremity edema, and ulcerated subcutaneous nodules developed consistent with an early type II reaction. He responded well to thalidomide and prednisone.

The etiology of the unusual appearance of his feet was unknown at the time of presentation. After treatment was initiated, much of the thick scale cleared revealing soft, pink, filiform verrucous papules (Fig 2). A fungal culture showed rare *Candida* species; therefore, he was started on an empiric trial of fluconazole and given clindamycin

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Fig 1. Before treatment, reddish brown indurated plaques and nodules were seen on the face, arms, legs and dorsal feet while hyperkeratotic, scaly plaques were present on the soles of the feet.



Fig 2. Soft, pink, and hyperpigmented verrucous papules seen on the soles of the feet after several weeks of multidrug treatment.

lotion and Lac-Hydrin cream. After failing to improve with this regimen, a biopsy of the sole of the left foot was taken, which showed thinning of the epidermis with a lymphocytic infiltrate and numerous acid-fast bacilli seen on Fite's stain (Fig 3). A periodic acid–Schiff stain was negative, and no viral changes were appreciated confirming the diagnosis of an unusual filiform verrucous presentation of leprosy involving the soles of the feet. His lesions continue to

improve on multidrug treatment combined with keratolytic agents and meticulous foot care.

DISCUSSION

Globally, Hansen's disease is estimated to affect more than 180,000 people.³ Its prevalence has rapidly decreased since the widespread implementation of multidrug therapy. In the 1980s and early 1990s, the global burden of Hansen's disease was estimated at 11 to 15 million people. Lepromatous leprosy typically presents with a symmetric eruption of infiltrated erythematous macules, papules, nodules, and plaques on the face, buttocks, and lower extremities.^{1,4} Despite this large number of patients, only 25 cases of verrucous lepromatous lesions have been reported to date.⁵

Verrucous lepromatous lesions were first described in 1897 at the First International Conference on Leprosy.⁵ Since then, Patki⁶ described 18 cases of verrucous lesions in leprosy and subdivided these into 3 distinct morphologic types: (1) lesions having fingerlike projections and resembling filiform warts, (2) thick hornlike

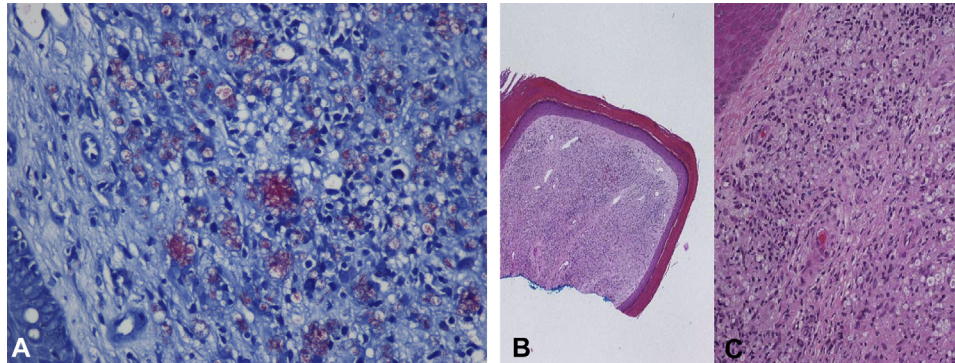


Fig 3. **A**, Numerous acid-fast bacilli. **B** and **C**, Predominantly lymphocytic infiltrate without involvement of the epidermis and histiocytes with globoid inclusions. (**A**, Fite's stain; **B** and **C**, Hematoxylin-eosin stain; original magnifications: **B**, $\times 4$ and **C**, $\times 20$.)

projections, and (3) hyperkeratosis and deep transverse fissures corresponding to the skin creases of the anterior aspects of the ankles.⁶

The etiology of these verrucous lesions is unclear, but case reports suggest that these lesions form in areas of sensory loss. Patki⁶ suggests other risk factors for verrucous development are anhidrosis secondary to autonomic neuropathy and the use of inexpensive shoes made of stiff plastic.⁶ The shoes described by Patki⁶ are important in verrucous lesion pathogenesis in that their rigid shape causes repetitive friction at a particular site. Because of lack of sensation, the patient is unaware of this chronic irritation. Thus, it can be alleged that any nidus for chronic irritation at an area of diminished sensation increases the risk of verrucous papules and plaques.⁶

Few previous case reports have described acral verrucous lesions in patients with Hansen's disease. Most reports describe verrucous lesions of the lower legs.^{5,6} Less commonly, the face, wrists, elbows, and heels have also presented with lepromatous verrucous lesions.^{5,7} Palmoplantar involvement is rare in all cutaneous presentations of Hansen's disease. This rarity is thought to be a result of the thicker epidermis and fibrofatty tissue in acral skin. The thick epidermis acts as a mechanical barrier, and the fibrofatty tissue ensures protection from heat dissipation. Both factors increase the temperature of the palms and soles, creating an inhospitable environment for *M leprae*, which replicates best at 27°C to 30°C.^{1,8}

Verrucous papules and plaques are rare cutaneous findings of Hansen's disease. They typically

occur in advanced cases of lepromatous leprosy on acral sites but do not constitute a distinct morphologic subtype of disease.⁵ It is important to consider leprosy in the differential diagnosis of acral verrucous lesions in the right clinical context. Correct diagnosis is essential, as verrucous lesions are highly treatable with standard multidrug therapy. In our patient, a biopsy specimen was taken of the plantar feet, results of which showed multiple acid-fast bacilli within histiocytes and nerves. In cases in which fewer organisms are seen histologically, polymerase chain reaction may be helpful.⁹

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